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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|--------------------|
| 10/623,615 | 07/22/2003 | Noboru Kunitatsu | HITA.0416 | 5051 |
| 38327 | 7590 | 05/09/2005 | EXAMINER | |
| REED SMITH LLP 3110 FAIRVIEW PARK DRIVE, SUITE 1400 FALLS CHURCH, VA 22042 | | | | SADULA, JENNIFER R |
| | | ART UNIT | | PAPER NUMBER |
| | | 1756 | | |

DATE MAILED: 05/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | |
|------------------------------|--------------------|------------------|
| Office Action Summary | Application No. | Applicant(s) |
| | 10/623,615 | KUNIMATSU ET AL. |
| | Examiner | Art Unit |
| | Jennifer R. Sadula | 1756 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 21 March 2005.

2a) This action is **FINAL**. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-32 is/are pending in the application.

4a) Of the above claim(s) 8-17, 19 and 27-32 is/are withdrawn from consideration.

5) Claim(s) _____ is/are allowed.

6) Claim(s) 1-7, 18, 20-26 is/are rejected.

7) Claim(s) _____ is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some * c) None of:

1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

| | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

Claims 8-17, 19 and 27-32 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 3/21/05.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Objections

Claim 22 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 22 is an exact duplicate of claim 21.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Applicants claim an IPS LCD comprising substrates arranged opposite one another through a liquid crystalline material and pixel electrode/counter electrode maintained on the surface of one of the substrates wherein the liquid crystalline material has a resistivity of less than $1 \times 10^{13} \Omega \cdot \text{cm}$.

Claims 1-3, 7 and 20 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Oe et al., Japanese Patent Publication No. 10-186391 ("Oe"). An English language translation has been supplied and is relied upon herein.

Oe teaches a liquid crystal display device comprising at least one surface of a liquid crystal layer between two sheets of transparent glass substrates and an insulating film formed thereon (abstract). A pixel electrode and a common electrode are formed as the electrode structure for driving the liquid crystal on the insulating film wherein the liquid crystal layer is less than $1 \times 10^{13} \Omega \cdot \text{cm}$ specific resistance (abstract). An orientation layer is formed on one face of the liquid crystal layer (claim 1, 0012) and is in contact with the liquid crystal layer. As noted in paragraph 0028, Oe teaches that the orientation film be charge transporting, thereby satisfying Applicants claims 2-3 and 20. Paragraph 0036 of Oe teaches that the orientation film is of a polyimide material. With regard to Applicants claim 7 the resistivity must be equivalents as the overall final product in example 3 remains the same with regard to resistivity.

Claims 1-3 and 20 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Matsumoto et al., U.S. Published Application No. 2002/0008830 (“Matsumoto”).

Matsumoto teaches an active matrix liquid crystal display device wherein, as shown in figure 4, the drain electrode (20) and the source electrode (22) are formed on opposing edges with reference to the pixel electrode (24) and the common electrode (14). SiN is an insulation formed over the entire region on the gate insulating film (16) wherein an alignment film (60) is formed on the surface of each of the active element substrate units and color filter and is subjected to rubbing. The liquid crystal molecules are nematic in nature having a resistivity of $1 \times 10^{12} \Omega \cdot \text{cm}$ (0060-0066). Examiner notes that the orientation film acts as a charge transporting layer as specified by Applicants own teaching.

Claims 1-4, 20 and 23-24 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Ohe et al., U.S. Patent No. 5,949,509 (“Ohe I”).

Ohe I teaches an active matrix liquid crystal display device utilizing a photo-alignment layer for charge transport between the source and the liquid crystalline layer (abstract) wherein the first alignment layer is formed either directly or via an insulating layer. The structure of the device is substantially as claimed (figure 4) wherein Ohe I further discloses that the liquid crystalline material to be of a resistivity of less than $1 \times 10^{13} \Omega \cdot \text{cm}$ (3:54-55 and embodiment 4). The polyimide-type polymer thin films were composed of a diamines component and a dianhydrides anhydride component (6:43-50) thereby satisfying Applicants claims 4 and 23-24.

Claims 1-3 and 20 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Ohe et al., U.S. Patent No. 5,914,761 ("Ohe II").

Ohe II teaches a liquid crystal display device with at least one of an insulating film and orienting layer wherein the orientation layer is interpreted as anticipating the charge transporting layer in accordance with Applicants' own teaching and the liquid crystalline material has a dielectric constant satisfying the equation of column 3 wherein the specific resistivity, P is around $5.1 \times 10^{11} \Omega \cdot \text{cm}$ (embodiment 1, 9:20-37). The material is noted for IPS or in-plane switching (3:1-25). Noteworthy of the specific resistivity are embodiments 1, 3 and 10.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-7, 18 and 20-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over

m/a
~~in view of Utsumi et al.~~, U.S. Patent No. 6,441,880 ("Utsumi"), in view of Oe, as applied above.

Utsumi teaches LCD's comprising a liquid crystal and a material capable of aligning a liquid crystal as detailed by figure 3 and the abstract. The materials are for IPS mode devices (3:40-55). The normally closed liquid crystalline display contains liquid crystals which contain one or more cyano groups. These liquid crystals are nematic in nature (13:4+). As noted in example 1, a 3% solution of polyamic acid (which is a precursor to the alignment control film which corresponds to Applicants charge transporting layer) is applied to the substrate and

imidized to prepare phenylenediamine compounds (12:35-52), thereby satisfying Applicants' claims 5 and 21-22. Phenylenediamine is further taught in the examples such as example 3. Additionally, with regard to claims 6, 18 and 25-26 the cyclopentanetetracarboxylic acid dianhydrides is taught for use in examples 4-7. However, Utsumi does not teach the resistivity of these liquid crystalline compounds nor does he teach the resistivity of the alignment material.

Oe teaches a liquid crystal display device comprising at least one surface of a liquid crystal layer between two sheets of transparent glass substrates and an insulating film formed thereon which is the same IPS device as taught by Utsumi (abstract). A pixel electrode and a common electrode are formed as the electrode structure for driving the liquid crystal on the insulating film wherein the liquid crystal layer is less than $1 \times 10^{13} \Omega \cdot \text{cm}$ specific resistance (abstract). An orientation layer is formed on one face of the liquid crystal layer (claim 1, 0012) and is in contact with the liquid crystal layer. As noted in paragraph 0028, Oe teaches that the orientation film be charge transporting, thereby satisfying Applicants' claims 2-3 and 20. Paragraph 0036 of Oe teaches that the orientation film is of a polyimide material, thereby making it similar to that of Utsumi. With regard to Applicants' claim 7 the resistivity must be equivalents as the overall final product in example 3 remains the same with regard to resistivity. Further, in accordance with the teaching of Utsumi, Oe teaches that the liquid crystalline material be cyano containing as this decreases the resistivity (0025-0026, formula 1 0043-0046).

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to make the device of Utsumi with a liquid crystalline material having decreased resistivity, such as those disclosed by Oe, with a reasonable expectation of forming a successful IPS device being stable at wide visual field angle and having display uniformity as taught by Oe.

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Examiner notes that the LC compounds of Utsumi and Oe are both cyano IPS LC materials for use with polyimide alignment materials.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Ohe et al. 2003/0103172 and Sato et al., 2004/0179162 both teach IPS systems as claimed. The same holds true for Ono et al. 2002/0101557.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer R. Sadula whose telephone number is 571.272.1391. The examiner can normally be reached on Monday through Friday, 10am-6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark F. Huff can be reached on 571.272.1385. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JRS


MARK F. HUFF
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700

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27 April 2005